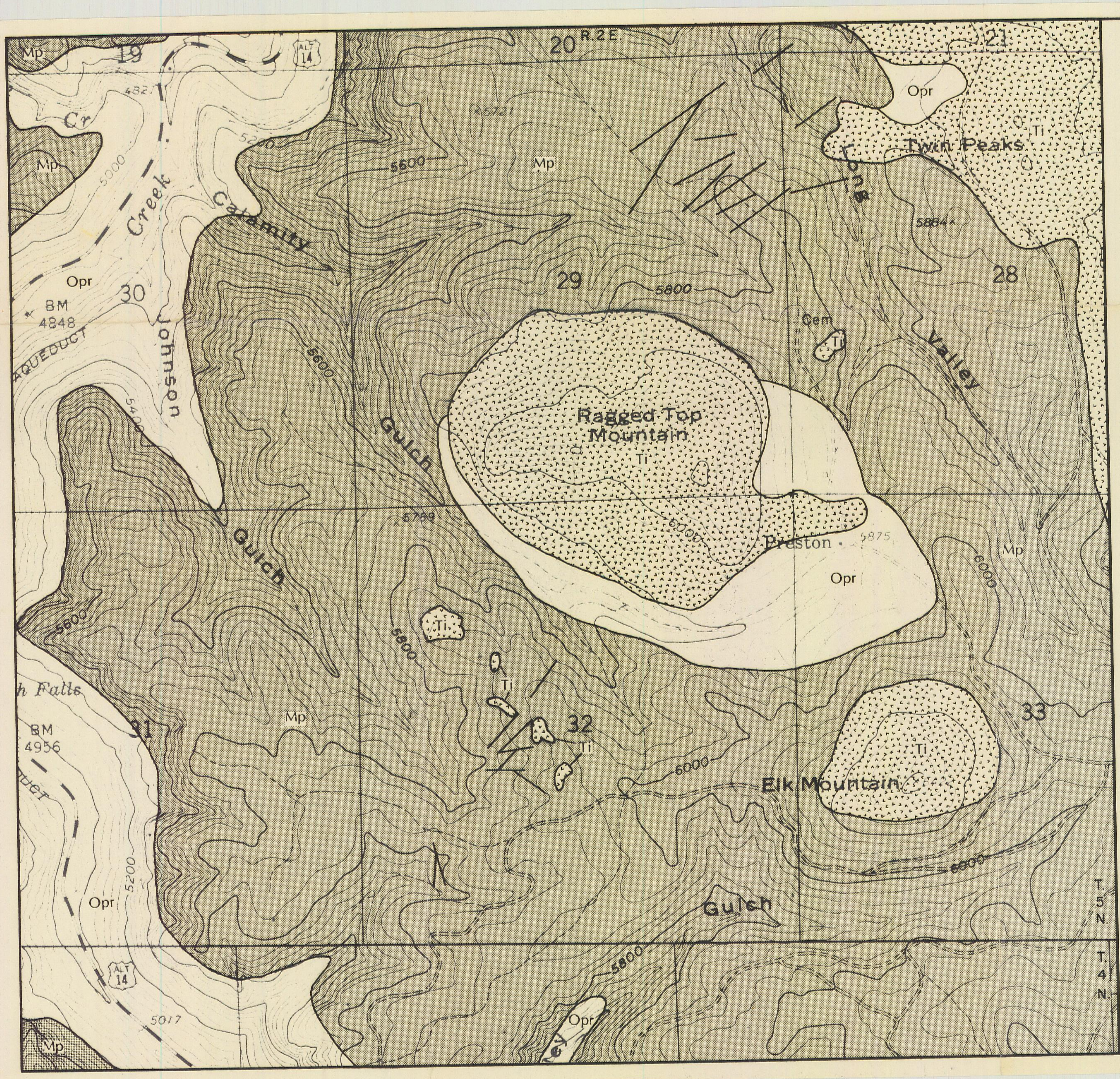


EXPLANATION

Ti	TERTIARY INTRUSIVES
Mp	PAHASAPA FM.
Opr	OLDER PALEOZOIC ROCKS - UNDERLYING Mp
⟋	"VERTICALS"

Southpoint #416

MAP 3.2-1

0 1000 2000
FEET

N

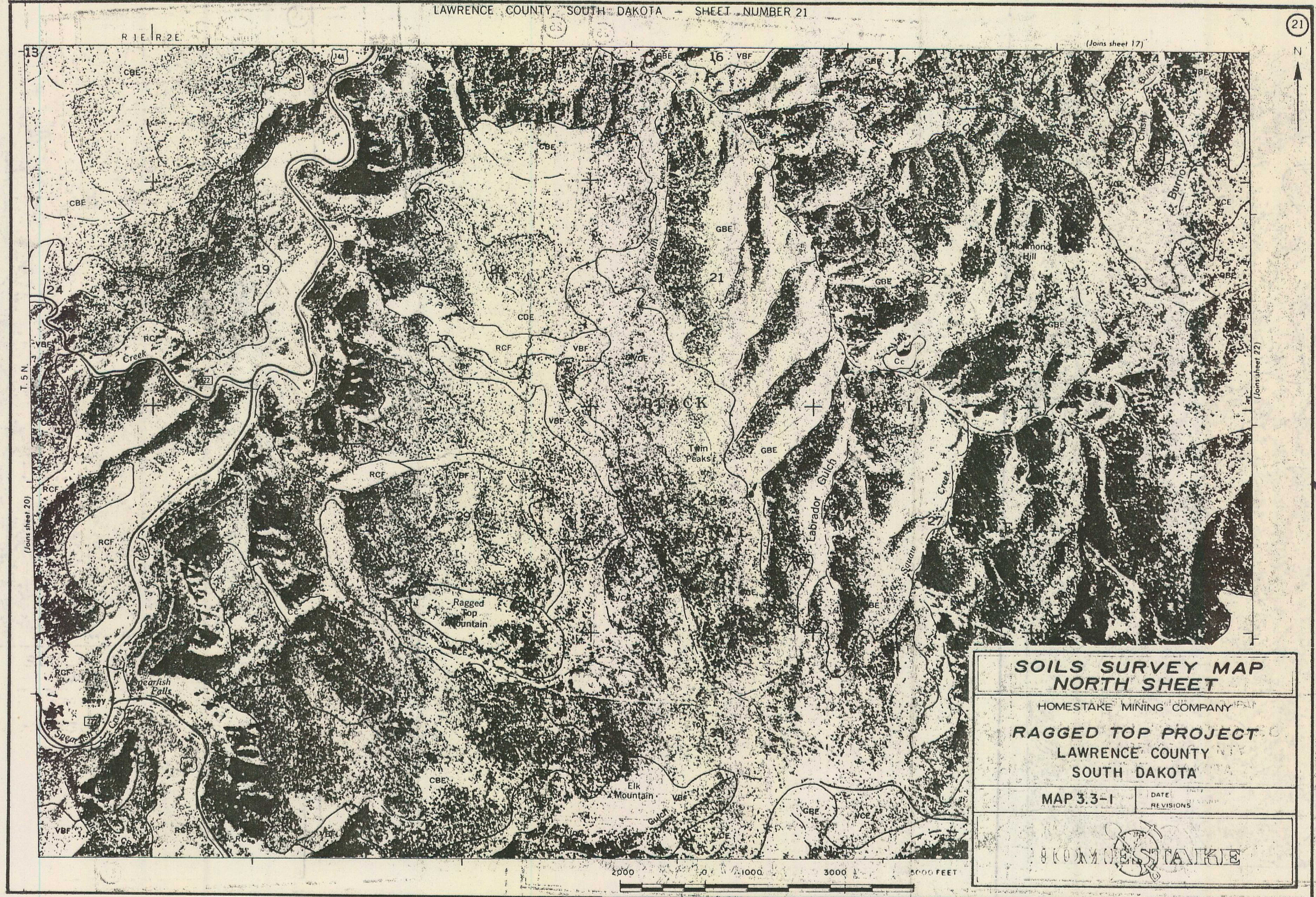
HOMESTAKE MINING COMPANY

HOMESTAKE

ULSTER PROJECT

RAGGED TOP DISTRICT ORE FIELD
GEOLOGIC MAP

DATA BY: AGW, TLJ	3/83
DRAWN BY: JLR	FIGURE 2



SOILS SURVEY MAP
NORTH SHEET

HOMESTAKE MINING COMPANY

RAGGED TOP PROJECT
LAWRENCE COUNTY
SOUTH DAKOTA

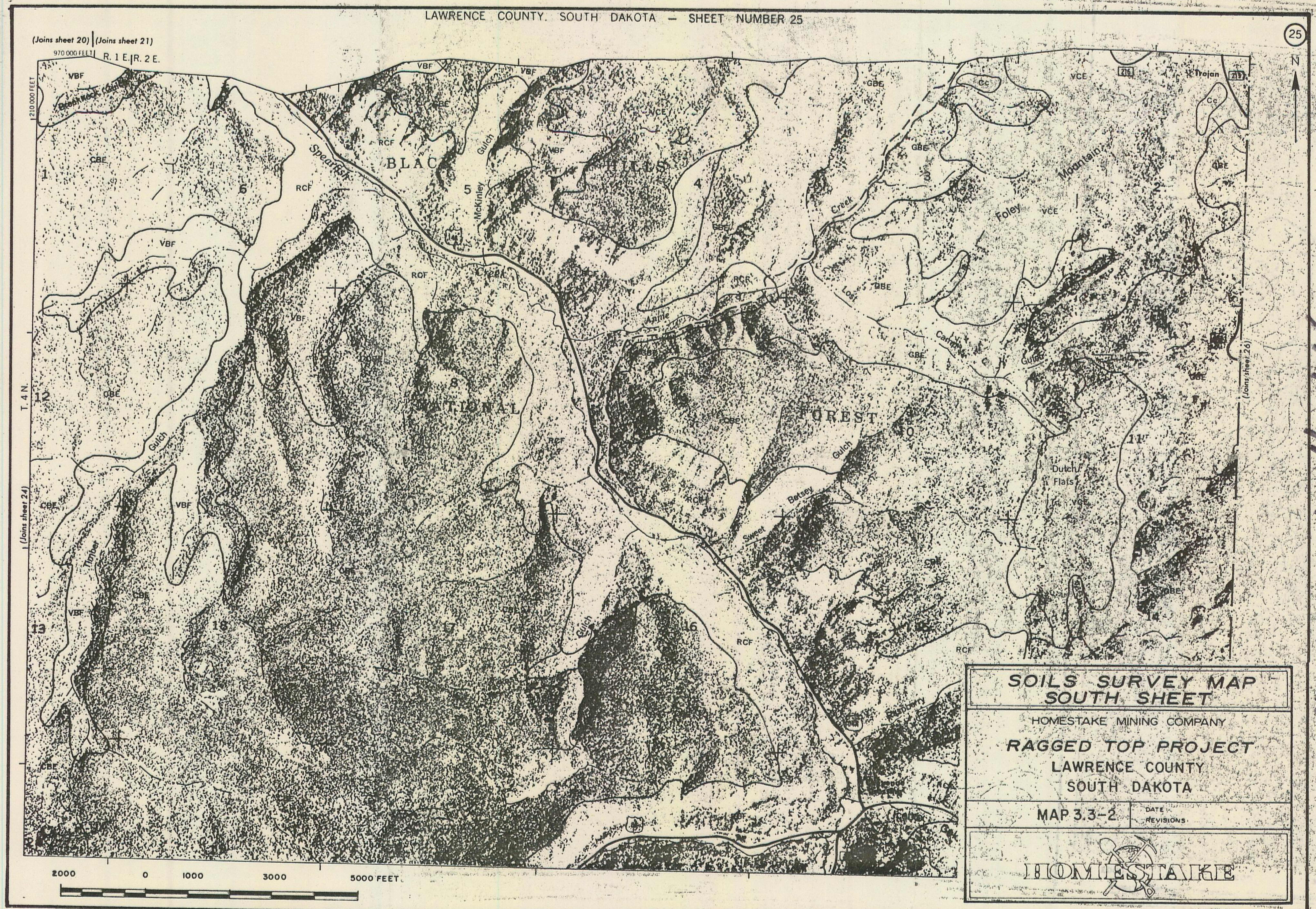
MAP 3.3-1

DATE
REVISIONS

HOMESTAKE

Southpoint #46

2



SOILS SURVEY MAP SOUTH SHEET

HOMESTAKE MINING COMPANY

RAGGED TOP PROJECT

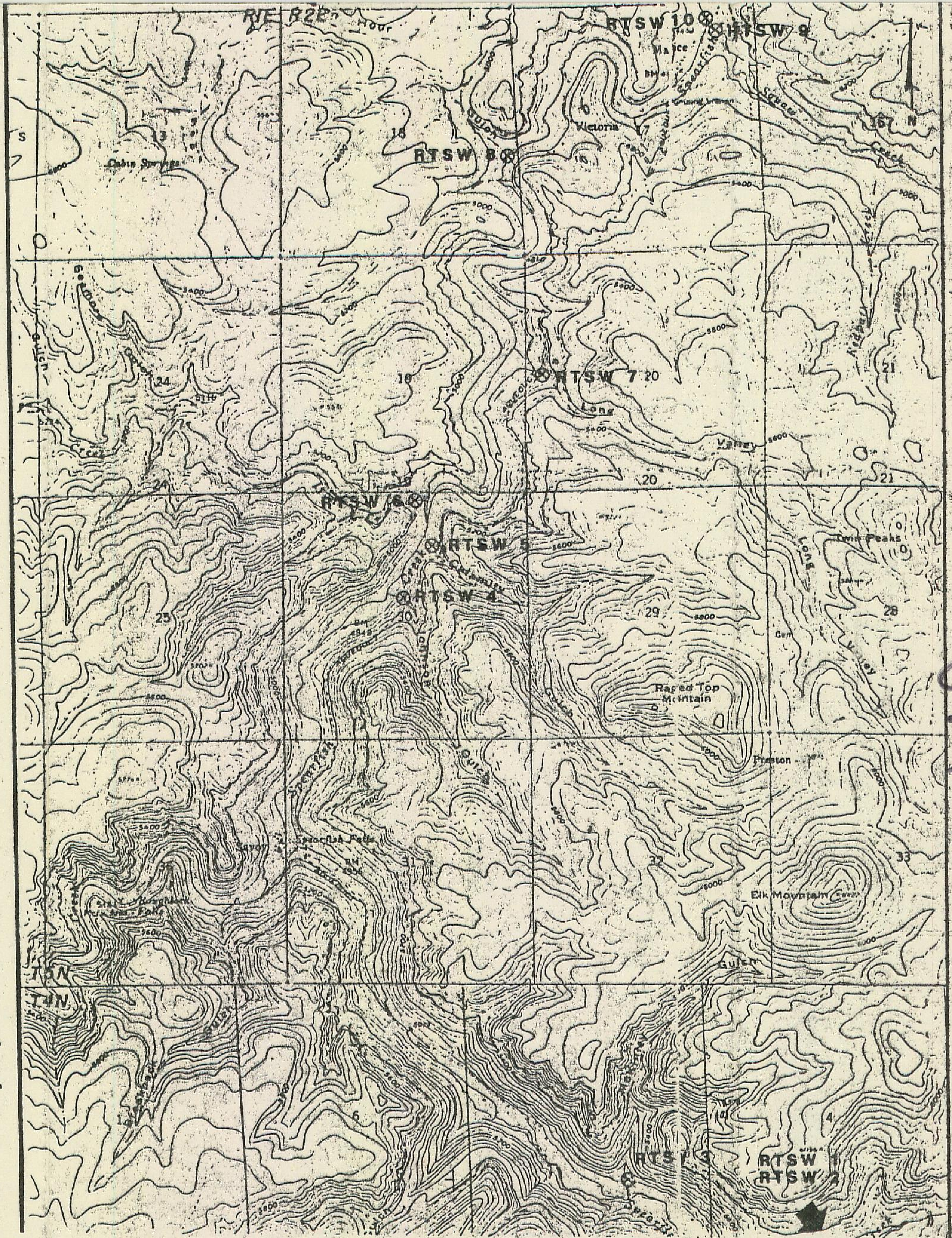
LAWRENCE COUNTY
SOUTH DAKOTA

MAP 3.3-2 DATE REVISIONS

HOMESTAKE

Southpoint #416

3



Southpoint
#416

MAP 3.8-1

SURFACE WATER QUALITY

SAMPLE POINTS

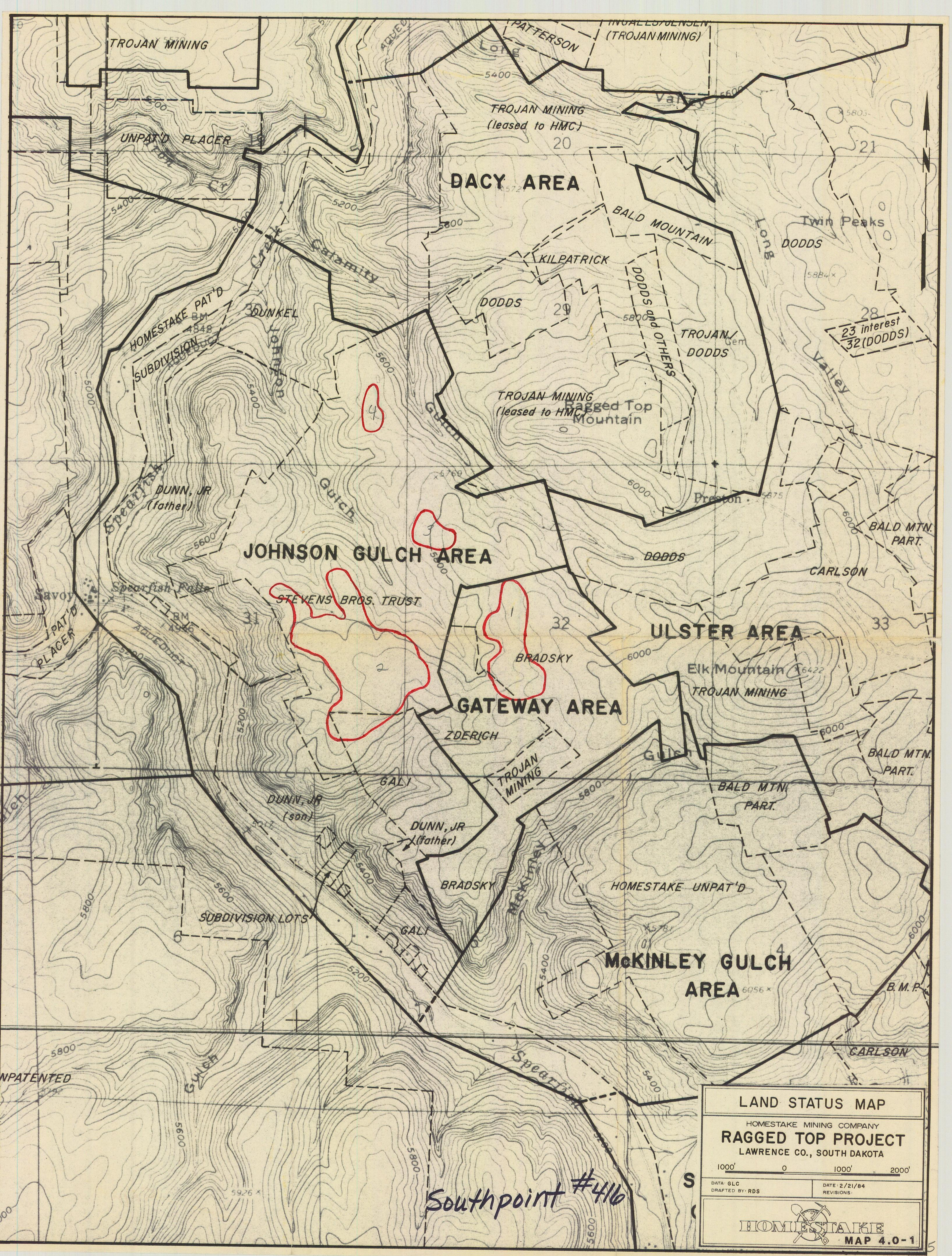
HOMESTAKE MINING COMPANY
RAGGED TOP PROJECT
LAWRENCE COUNTY, S. DAKOTA

0' 2000' 4000'

DATA T.L.J
DRAFTED BY RDS
DATE 7/83
REVISIONS

HOMESTAKE

BASE FROM PORTIONS OF SAVOY AND MAURICE, SOUTH DAKOTA 7 1/2 MINUTE U.S.G.S. TOPOGRAPHIC QUAD



LAND STATUS MAP

HOMESTAKE MINING COMPANY

RAGGED TOP PROJECT

LAWRENCE CO., SOUTH DAKOTA

1000' 0 1000' 2000'

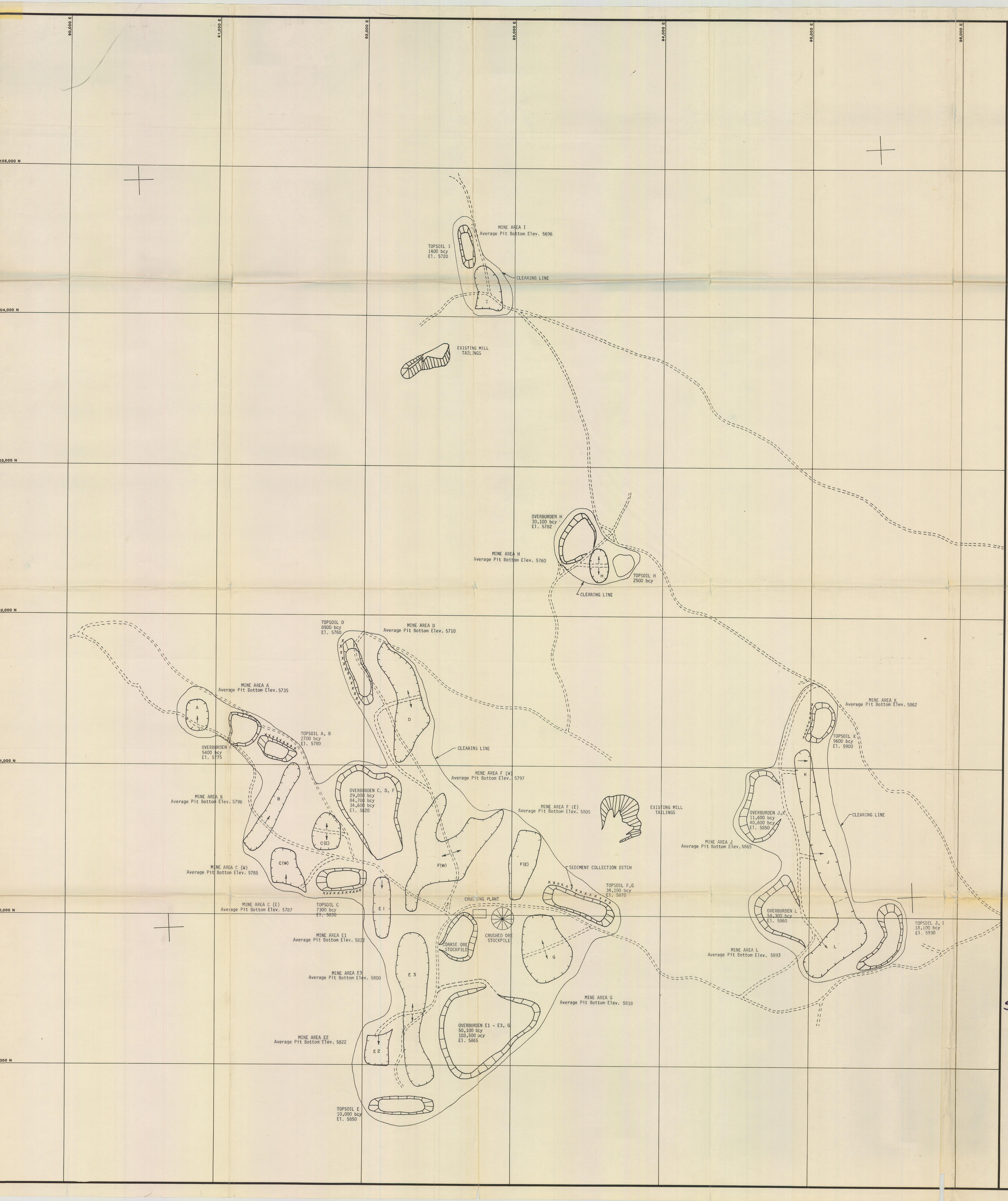
DATA: GLC
DRAFTED BY: RDS

DATE: 2/21/84
REVISIONS:

HOMESTAKE

MAP 4.0-1

Southpoint #416



Southpoint #416

xxxxx SEDIMENT COLLETION DITCH

0 200 400
FEET

MAP 5.0-1

**HOMESTAKE
MINING
COMPANY**

HOMESTAKE

RAGGED TOP PROJECT

JOHNSON GULCH

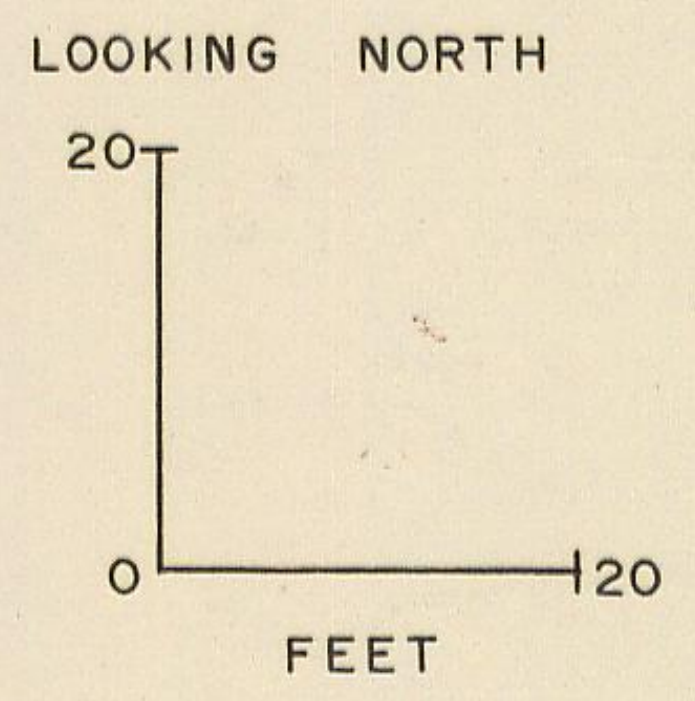
LAWRENCE COUNTY, SOUTH DAKOTA

SECTIONS 29, 30, 31, 32, T.5N., R.2E.

MINE PLAN MAP

Southpoint

Exhibit 5.0–



HOMESTAKE
MINING
COMPANY

BLACK HILLS EXPLORATION

CROSS SECTION THRO
MINE AREA E-3

JOHNSON GULCH

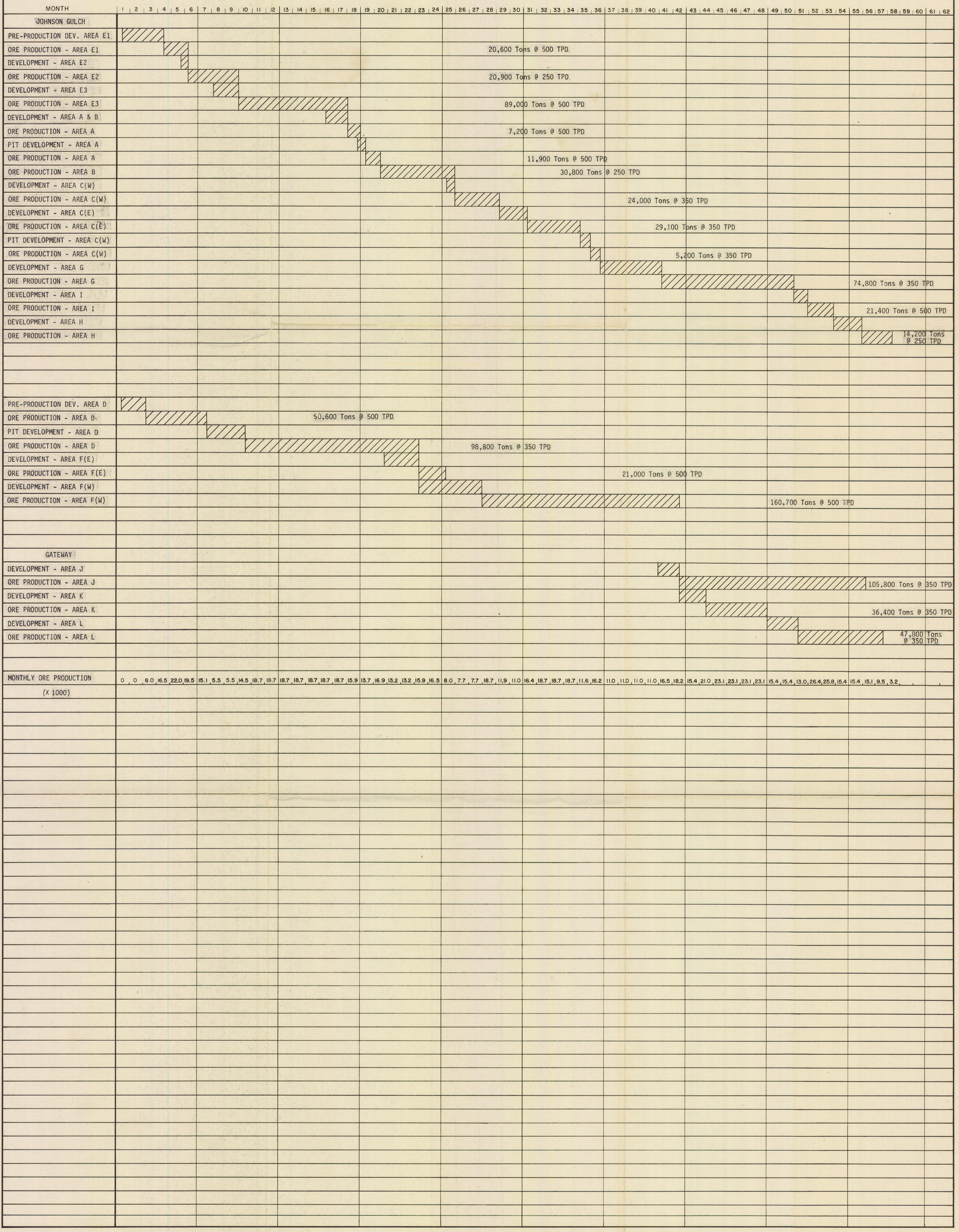
BY: ________ DATE: ________
DRFT'D. BY: ________ DATE: ________
REVISION DATE: ________ BY: ________
FIG. NO.

Southpoint #416

Exhibit 5.0-4

RAGGED TOP PROJECT

DEVELOPMENT - PRODUCTION SCHEDULE



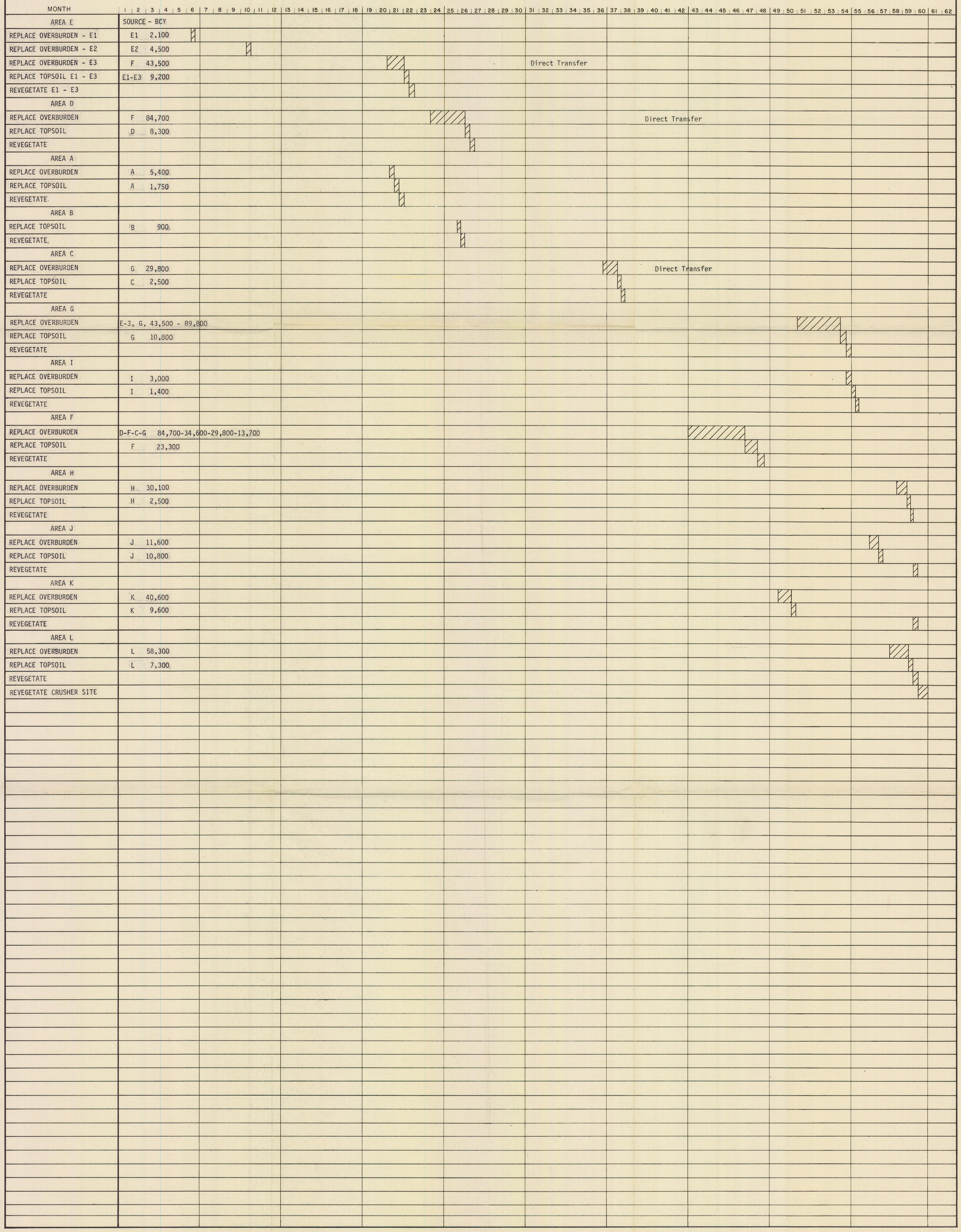
8

Southpoint #416

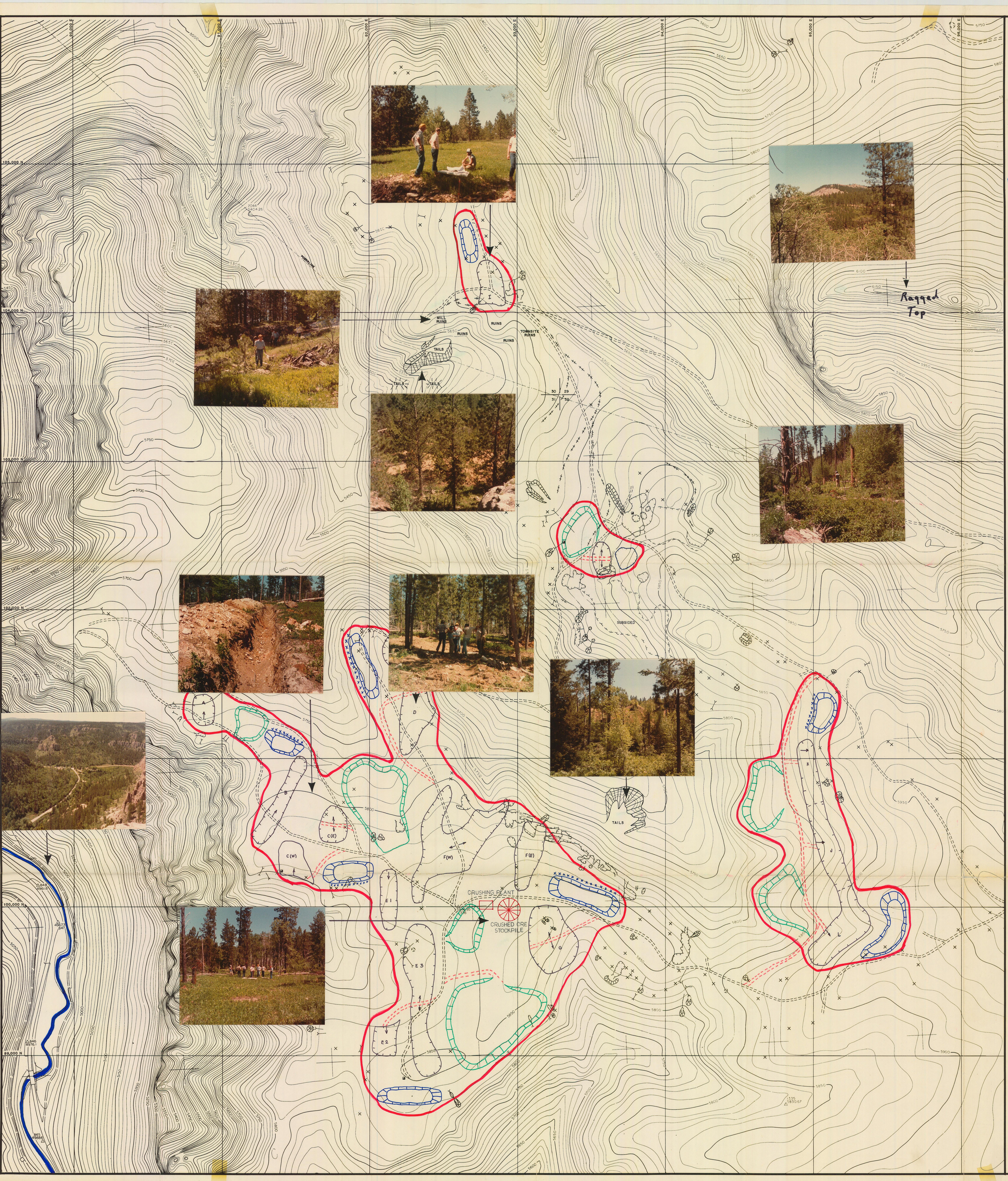
Exhibit 5.0-5

RAGGED TOP PROJECT

RECLAMATION SCHEDULE



MONTH	
AREA E	SOURCE - BCY
REPLACE OVERBURDEN - E1	E1 2,100
REPLACE OVERBURDEN - E2	E2 4,500
REPLACE OVERBURDEN - E3	F 43,500
REPLACE TOPSOIL E1 - E3	E1-E3 9,200
REVEGETATE E1 - E3	
AREA D	
REPLACE OVERBURDEN	F 84,700
REPLACE TOPSOIL	D 8,300
REVEGETATE	
AREA A	
REPLACE OVERBURDEN	A 5,400
REPLACE TOPSOIL	A 1,750
REVEGETATE	
AREA B	
REPLACE TOPSOIL	B 900
REVEGETATE	
AREA C	
REPLACE OVERBURDEN	G 29,800
REPLACE TOPSOIL	C 2,500
REVEGETATE	
AREA G	
REPLACE OVERBURDEN	E-3, G, 43,500 - 89,800
REPLACE TOPSOIL	G 10,800
REVEGETATE	
AREA I	
REPLACE OVERBURDEN	I 3,000
REPLACE TOPSOIL	I 1,400
REVEGETATE	
AREA F	
REPLACE OVERBURDEN	D-F-C-G 84,700-34,600-29,800-13,700
REPLACE TOPSOIL	F 23,300
REVEGETATE	
AREA H	
REPLACE OVERBURDEN	H 30,100
REPLACE TOPSOIL	H 2,500
REVEGETATE	
AREA J	
REPLACE OVERBURDEN	J 11,600
REPLACE TOPSOIL	J 10,800
REVEGETATE	
AREA K	
REPLACE OVERBURDEN	K 40,600
REPLACE TOPSOIL	K 9,600
REVEGETATE	
AREA L	
REPLACE OVERBURDEN	L 58,300
REPLACE TOPSOIL	L 7,300
REVEGETATE	
REVEGETATE CRUSHER SITE	



KEY:

TOPSOIL STOCKPILE

××××× SEDIMENT COLLECTION DITCH

OVERBURDEN STOCKPILE

MINE AREA

ACCES ROADS

CLEARING LINE

CREEK

Southpoint #416

ADIT WITH DUMP

TRENCH × PIT ◪ SHAFT

OPEN CUT OR SUBSIDED AREA

==== ROAD ++ ++ OLD RR GRADE

RECEIVE
APR 24 1984
EXPLORATION
MINING PROG

0 200 400
FEET

MAP 6.0-1

**HOMESTAKE
MINING
COMPANY**

HOMESTAKE

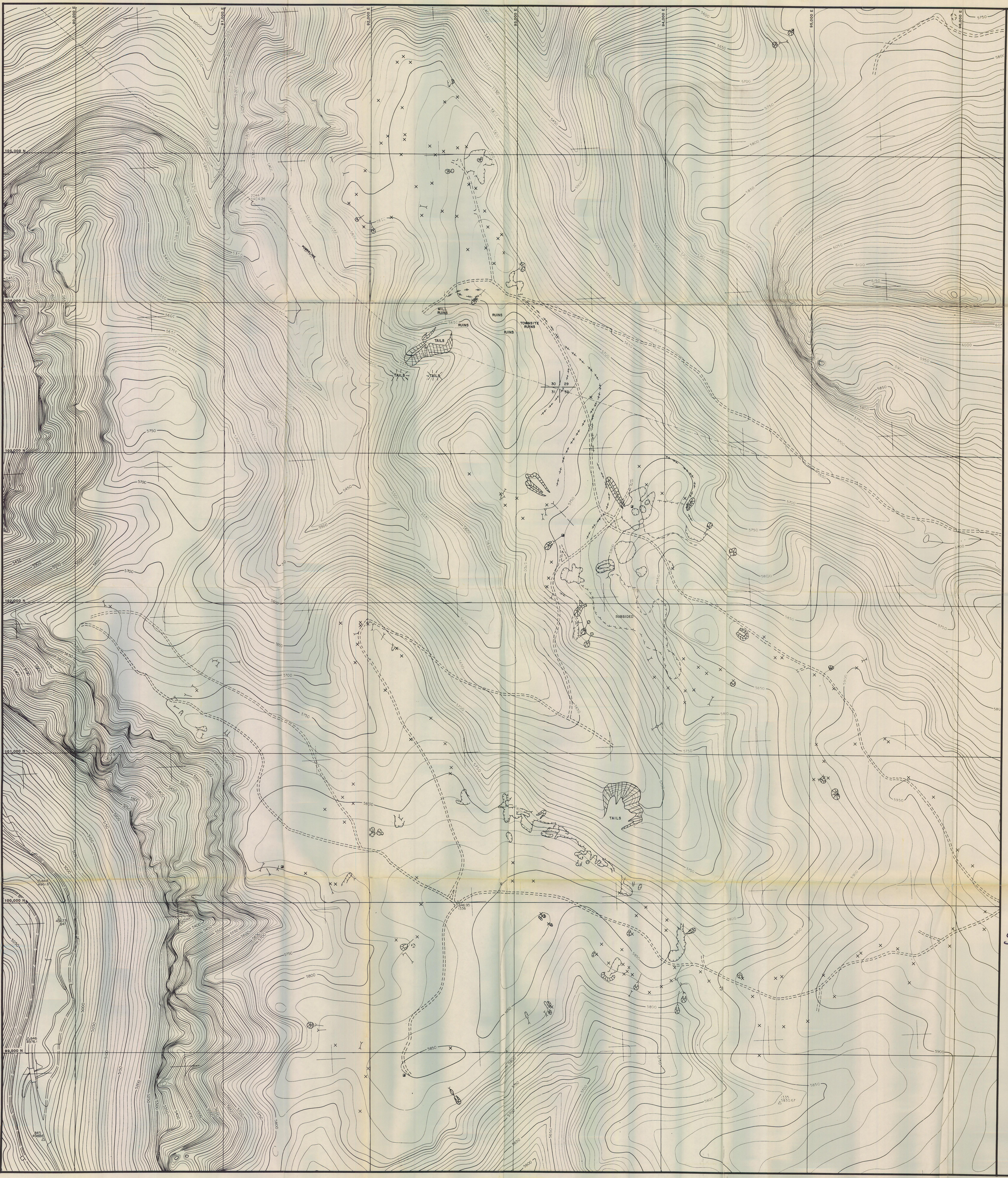
RAGGED TOP PROJECT

JOHNSON GULCH

LAWRENCE COUNTY, SOUTH DAKOTA
SECTIONS 29, 30, 31, 32, T.~~5S.~~ 5N, R.2E.

PRE - MINING
TOPOGRAPHY

USED AS EXHIBIT AT BME MEETING
DEADWOOD, SD, July 18, 1984



Southpoint #416

ADIT WITH DUMP

TRENCH X PIT SHAFT

OPEN CUT OR SUBSIDED AREA

==== ROAD ++ ++ OLD RR GRADE

0 200 400
FEET

MAP 6.0-1

**HOMESTAKE
MINING
COMPANY**

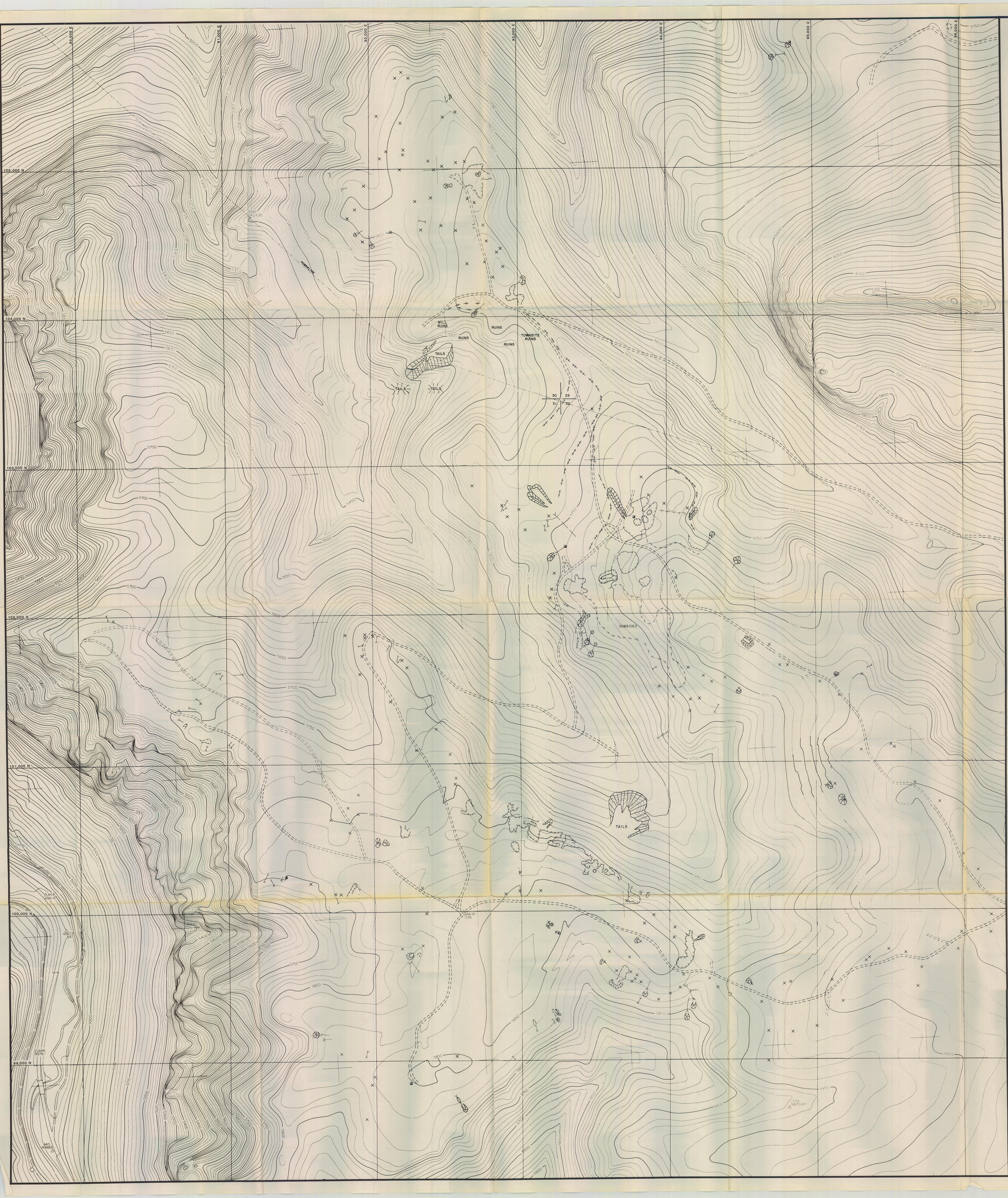
HOMESTAKE

RAGGED TOP PROJECT

JOHNSON GULCH

LAWRENCE COUNTY, SOUTH DAKOTA
SECTIONS 29, 30, 31, 32, T.5S., R.2E.

PRE - MINING
TOPOGRAPHY



Southpoint #416

ADIT WITH DUMP

TRENCH ✕ PIT ◪ SHAFT

OPEN CUT OR SUBSIDED AREA

==== ROAD ++ ++ OLD RR GRADE

0 200 400

FEET

MAP 6.0-2

**HOMESTAKE
MINING
COMPANY**

HOMESTAKE

RAGGED TOP PROJECT

JOHNSON GULCH

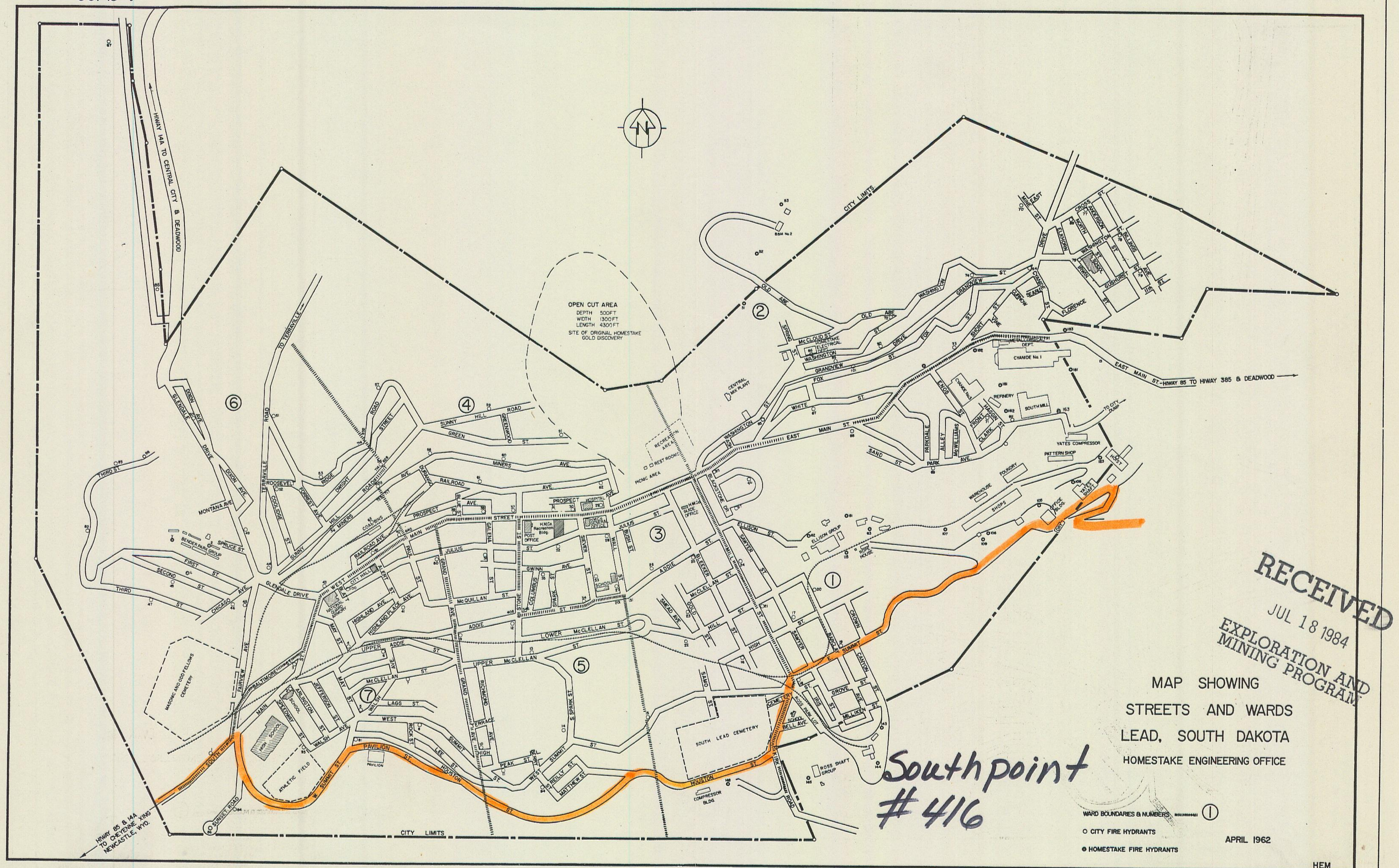
LAWRENCE COUNTY, SOUTH DAKOTA

SECTIONS 29, 30, 31, 32, T.5S., R.2E.

POST-MINING TOPOGRAPHY

Southpoint
#416
TAILS
101,000 N
100,000 N
99,000 N
△848
4961.6
49673
847
△846
4976
845
49886
C(W)
E2
SECTION A
SECTION B
SEC
B
5000
5050
5100
5150
5200
5250
5300
5350
5400
5450
5500
5550
5600
5650
5700
5750
5800
5850

A-61-100


OPEN CUT AREA
DEPTH 500FT
WIDTH 1300FT
LENGTH 4300FT
SITE OF ORIGINAL HOMESTAKE GOLD DISCOVERY
HWAY 14A TO CENTRAL CITY & DEADWOOD
CITY LIMITS
EAST MAIN ST – HWAY 85 TO HWAY 385 & DEADWOOD
HWAY 85 & 14A TO CHEYENNE XING NEWCASTLE, WYO
SOUTH LEAD CEMETERY
ROSS SHAFT GROUP
①
②
③
④
⑤
⑥
⑦

MAP SHOWING
STREETS AND WARDS
LEAD, SOUTH DAKOTA
HOMESTAKE ENGINEERING OFFICE

WARD BOUNDARIES & NUMBERS ①
○ CITY FIRE HYDRANTS
● HOMESTAKE FIRE HYDRANTS

APRIL 1962

HEM

RECEIVED
JUL 18 1984
EXPLORATION AND
MINING PROGRAM

Southpoint
#416

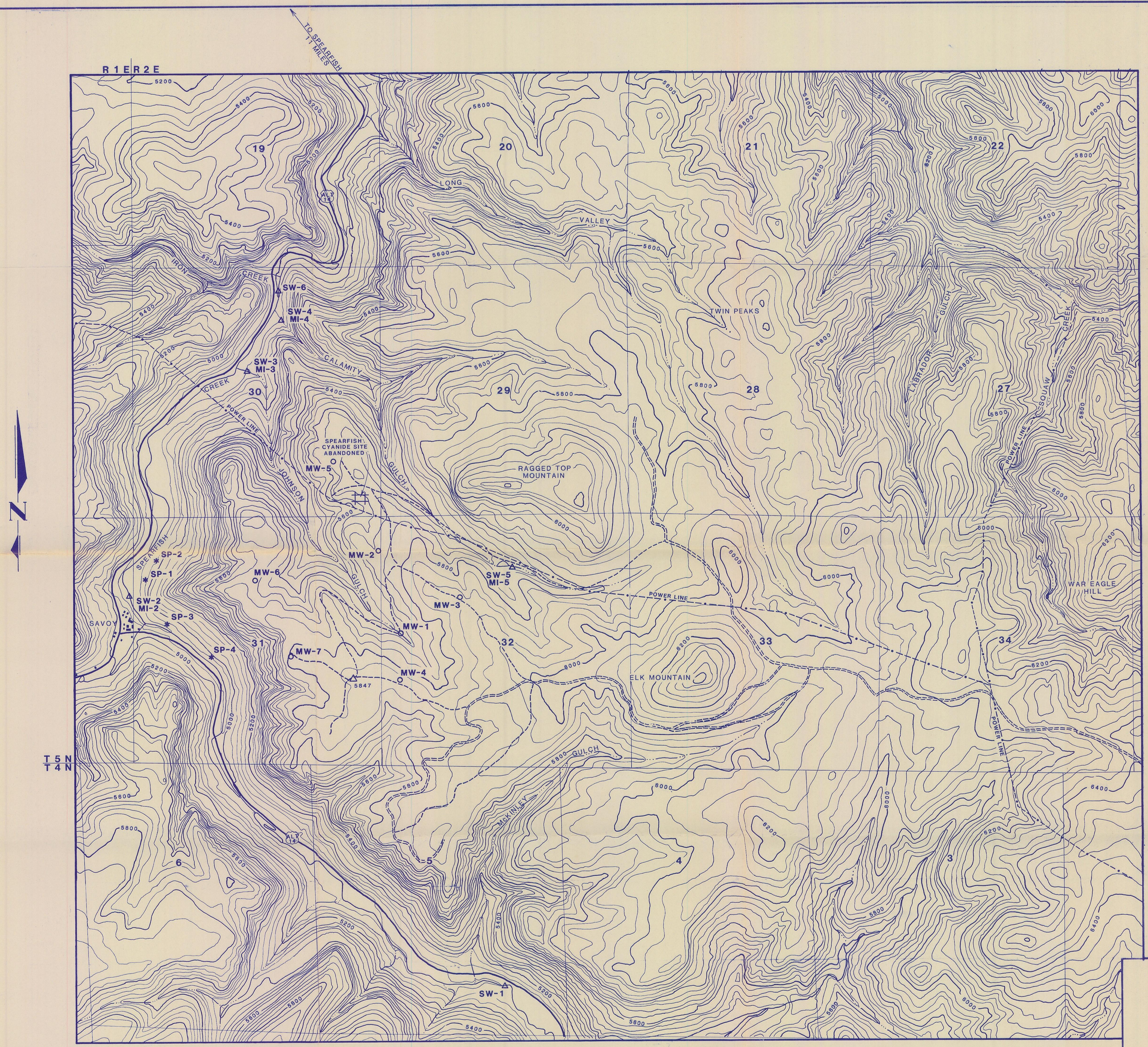
HMCo. Ragged Top Permit - Haul Road in Lead

A-61-100

PROJECT NAME

PROJECT NO.

DWG. TITLE



LEGEND

MW-1 ○ Monitoring Well Location and identfication number

SW-1 △ Surface Water Monitoring Location and identification number

MI-1 △ Macroinvertebrate Sampling Station

SP-1 ✳ Identified Spring

SCALE (FEET)

0 500 1000 2000 3000

40' CONTOUR INTERVAL

PREPARED FOR:

Minerva Explorations, Inc.

PREPARED BY:

ADRIAN BROWN
CONSULTANTS

TITLE

SURFACE WATER,
GROUNDWATER AND
MACROINVERTEBRATE
SAMPLING LOCATIONS

SCALE

DWG. No.

1

REVISION

△

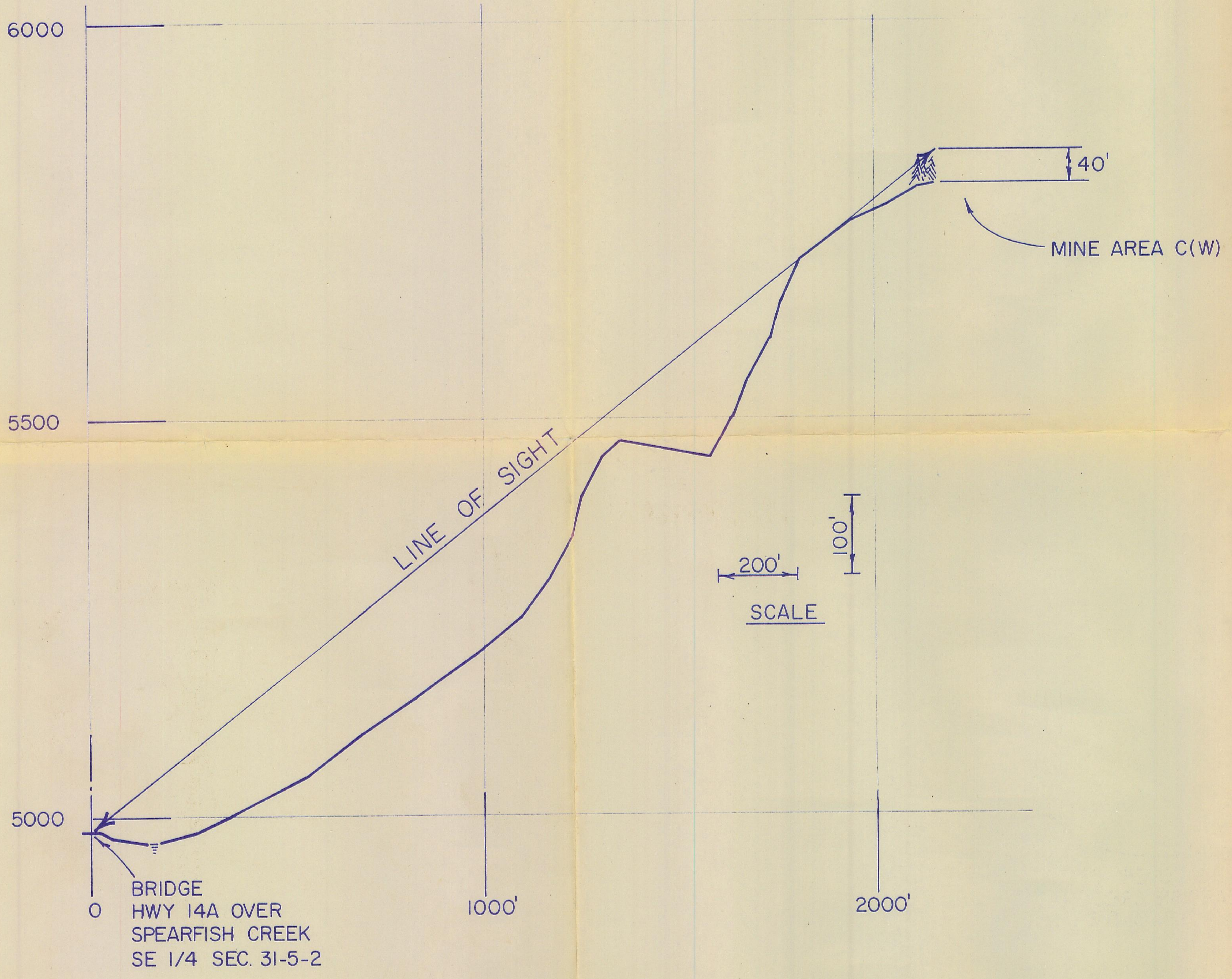
REFERENCES

DESIGNED
DRAWN
CHECKED
APPROVED
APPROVED
APPROVED

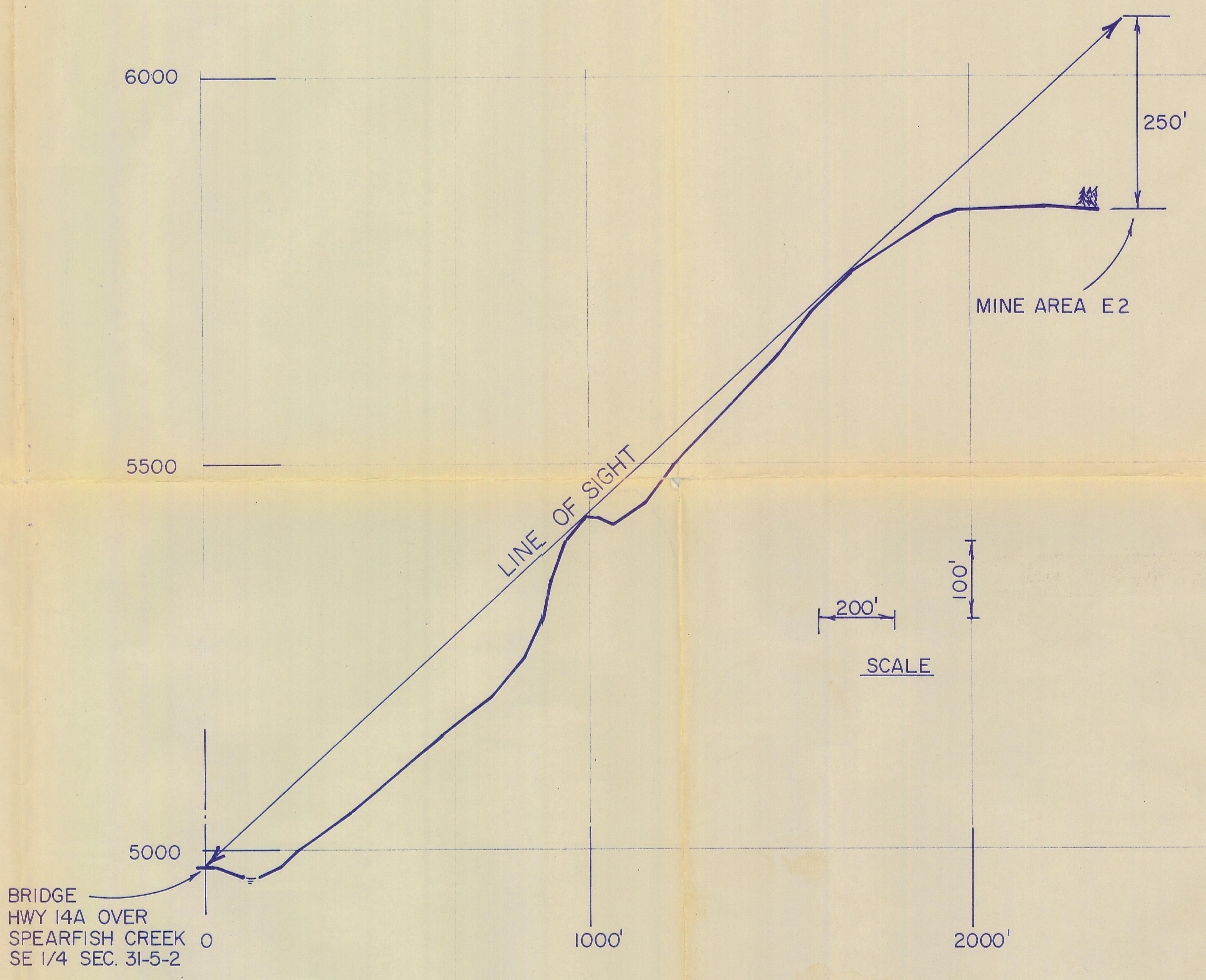
REVISION

No.	DESCRIPTION	BY	DATE
	Southpoint #416		

17



SECTION A - BRIDGE TO C(W)



SECTION B - BRIDGE TO E2

Southpoint #416

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JUL 16 1984
EXPLORATION AND
MINING PROGRAM

DATE	BY	REVISIONS

HOMESTAKE MINING CO.
LEAD, SO. DAK.
ENGR DEPARTMENT

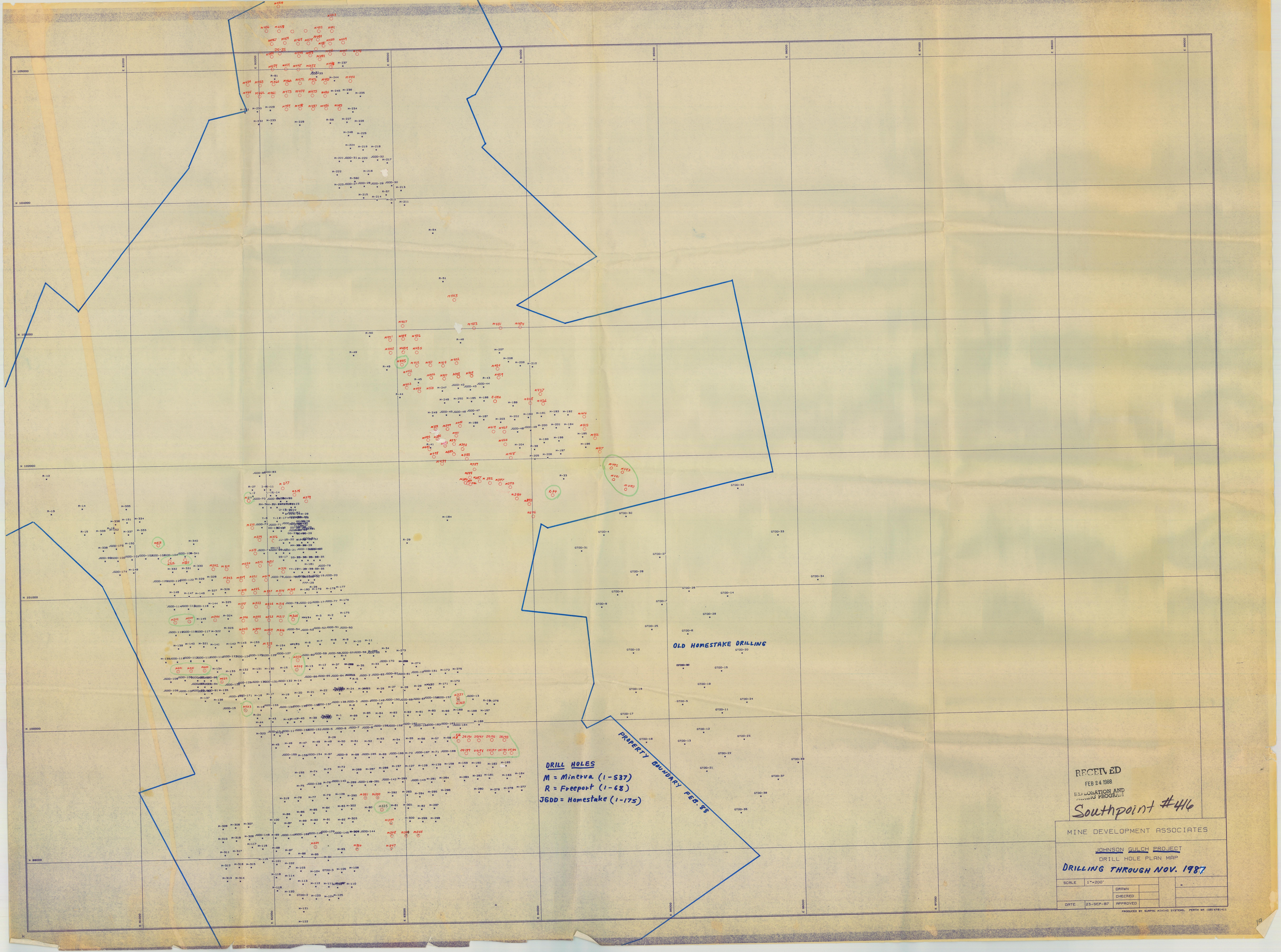
DRAWN BY Dm
APPROVED
TRACED
SCALE NOTED
CHECKED
DATE 7-9-84

RAGGED TOP MINE PROJECT
LINE OF SIGHT CROSS SECTIONS

DWG. NO.

18

BRUNING 40-21 55132



DRILL HOLES

M = Minerva (1-537)
R = Freeport (1-68)
JGDD = Homestake (1-175)

RECEIVED
FEB 24 1988
EXPLORATION AND
MINING PROGRAM

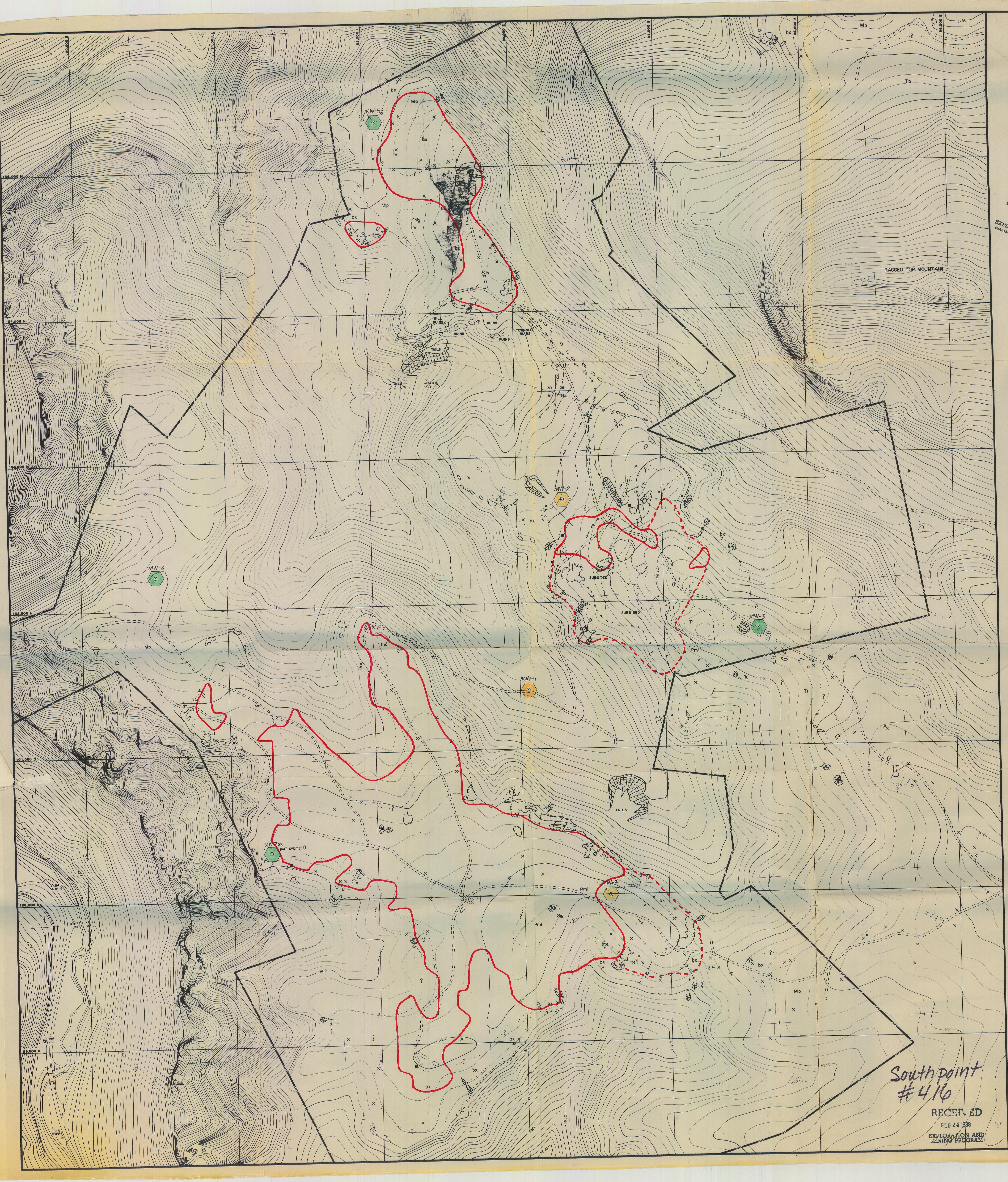
Southpoint #416

MINE DEVELOPMENT ASSOCIATES

JOHNSON GULCH PROJECT
DRILL HOLE PLAN MAP
DRILLING THROUGH NOV. 1987

SCALE	1"=200'		
		DRAWN	
		CHECKED	
DATE	23-SEP-87	APPROVED	

PRODUCED BY SURPAC MINING SYSTEMS, PERTH WA (09) 4781411



RECEIVED
FEB 24 1988
EXPLORATION AND MINING PROGRAM

Southpoint
#416

RECEIVED
FEB 24 1988
EXPLORATION AND MINING PROGRAM

February 88 / M.D.R.

⬢	PRIMARY GROUND WATER MONITOR WELLS
⬢	AUXILIARY MONITOR WELLS
⬢	MONITOR WELL COMPLETED IN DEADWOOD FM.
◯	AREAS OF DRILL INDICATED ORE RESURVES (AS OF DEC. 87)
◌	PROBABLE ADDITIONAL ORE (AS OF DEC. 87)

EXPLANATION

GEOLOGY

☐	Ti TERTIARY INTRUSIVES	Tt – trachyte Tr – rhyolite Tp – phonolite
☐	Pml ss & ls, MINNELUSA FM.	
☐	Mp ls & dol	PAHASAPA FM.
☐	bx SOLUTION BRECCIA	
☐	De ls, ENGLEWOOD FM.	
☐	Ow ls, ss, & sh, WHITEWOOD AND WINNIPEG FM	
☐	Єd ss, dol, sh, DEADWOOD FM.	
- ? -	CONTACT, ?? WHERE INFERRED	
⊥ 8	STRIKE & DIP	
-·-·-	FRACTURE OR VERTICAL	

▬ ▬	PROPERTY BOUNDARY
⊛	ADIT WITH DUMP
⤙	TRENCH ✕ PIT ◪ SHAFT
◌	OPEN CUT OR SUBSIDED AREA
====	ROAD ++ ++ OLD RR GRADE

0 200 400
FEET

Minerva Exploration Ltd.

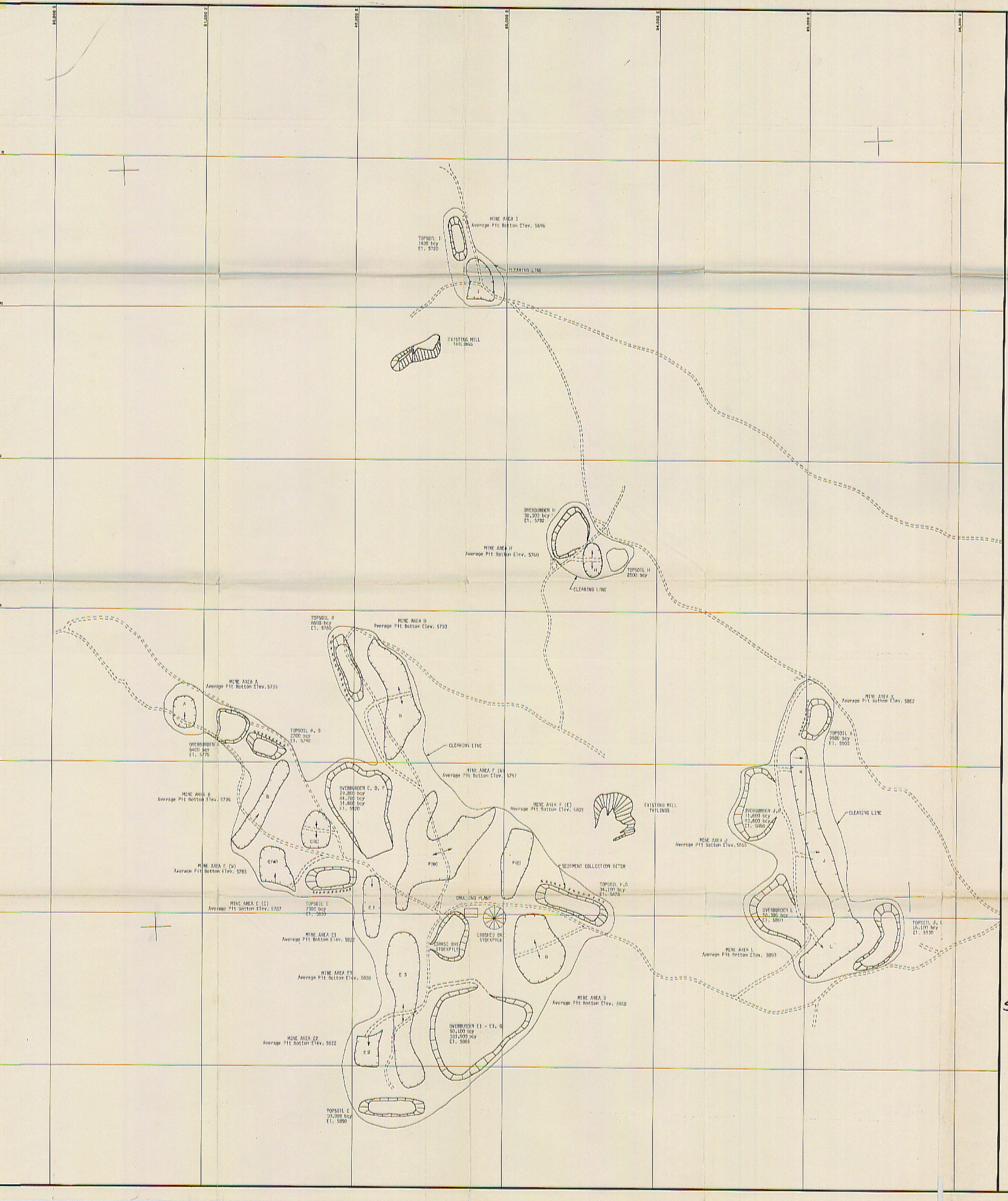
RAGGED TOP PROJECT

JOHNSON GULCH

Lawrence County, South Dakota
Sections 29, 30, 31, 32 - T5N R2E

GEOLOGY

EJK, GJM, 1983



Southpoint #416

xxxxx SEDIMENT COLLETION DITCH

0 200 400
FEET

MAP 5.0-1

**HOMESTAKE
MINING
COMPANY**

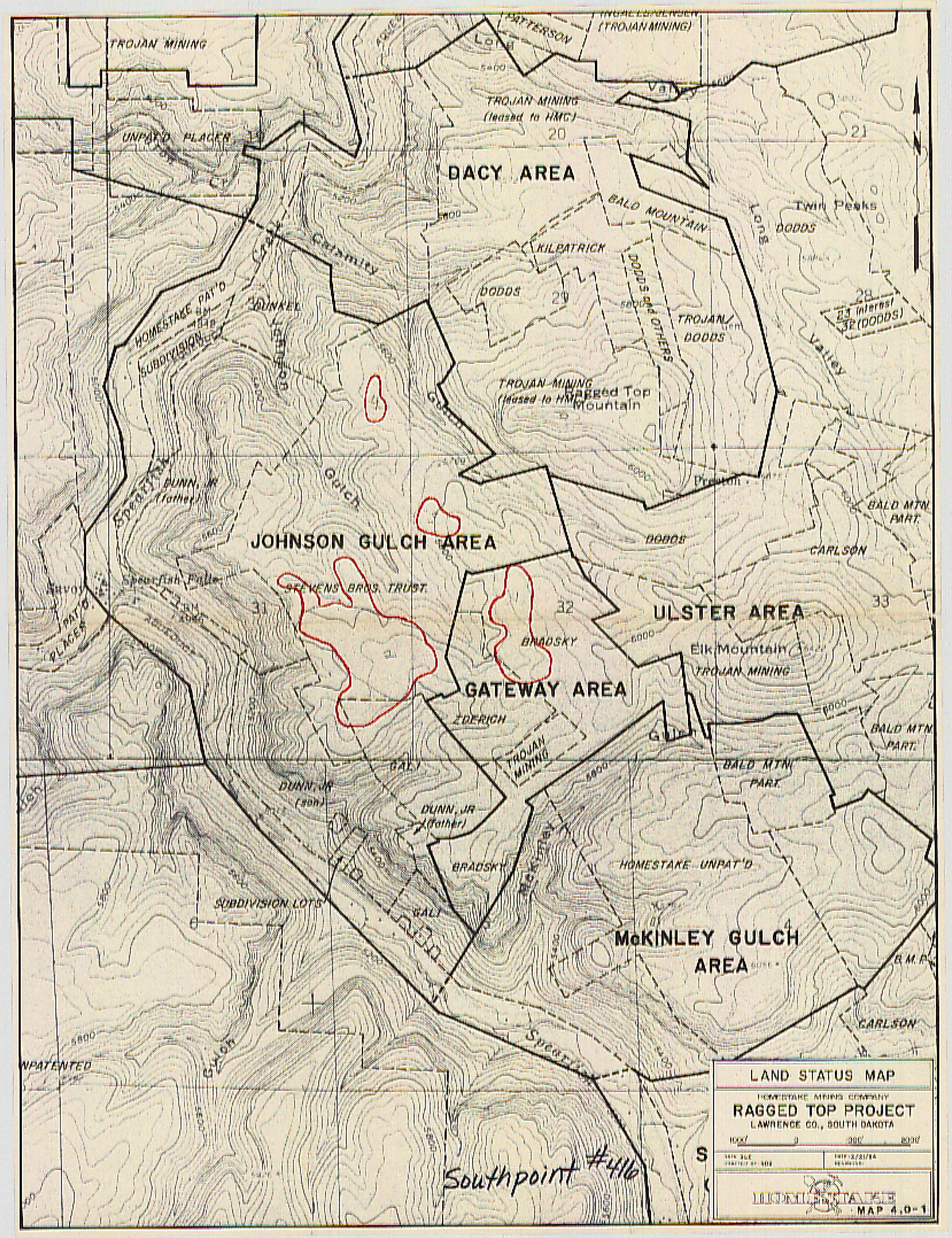
RAGGED TOP PROJECT

JOHNSON GULCH

LAWRENCE COUNTY, SOUTH DAKOTA

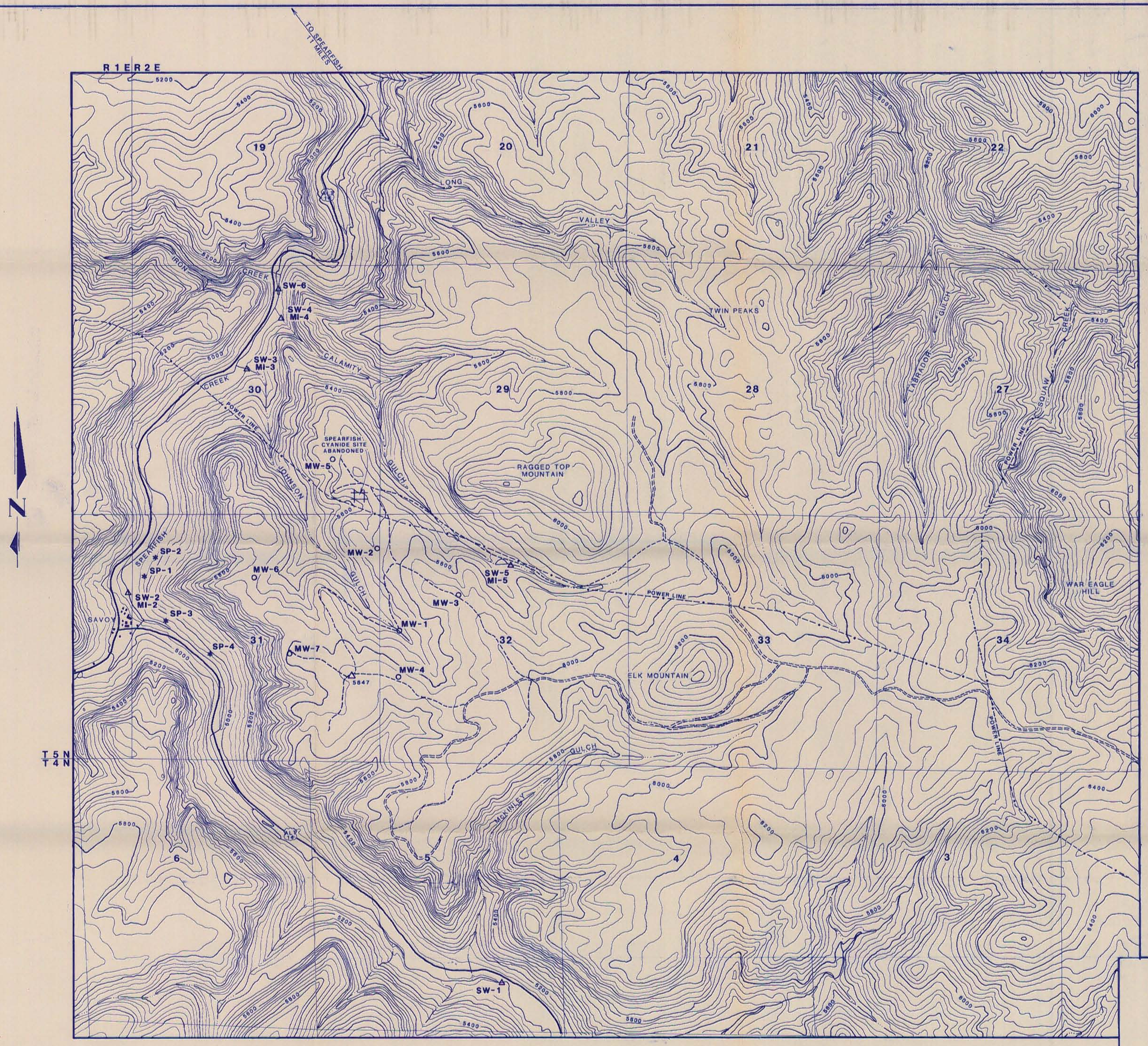
SECTIONS 29, 30, 31, 32, T.6N., R.2E.

MINE PLAN MAP



Southpoint #416

PROJECT NAME
PROJECT NO.
DWG. TITLE



LEGEND

MW-1
○ Monitoring Well Location and identfication number

SW-1
△ Surface Water Monitoring Location and identification number

MI-1
△ Macroinvertebrate Sampling Station

SP-1
✱ Identified Spring

SCALE (FEET)
0 500 1000 2000 3000
40' CONTOUR INTERVAL

PREPARED FOR:
Minerva Explorations, Inc.

PREPARED BY:
ADRIAN BROWN
CONSULTANTS

TITLE
SURFACE WATER,
GROUNDWATER AND
MACROINVERTEBRATE
SAMPLING LOCATIONS

SCALE

REVISION
△

DWG. No.
1

REFERENCES

DESIGNED
DRAWN
CHECKED
APPROVED
APPROVED
APPROVED

REVISION No.	DESCRIPTION	BY	DATE